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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908

7590 08/16/2004

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EXAMINER

STEVENS, THOMAS H


ART UNIT PAPER NUMBER

2123

DATE MAILED: 08/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 09/630,918	Applicant(s) KRAAL ET AL. 	
	Examiner Thomas H. Stevens	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 1-6 and 8-20 were examined.

***Response to Amendments/Arguments***

***Specification***

2. The examiner thanks the applicant for addressing this issue. Objection is withdrawn.

***35 USC § 102(b) and 103(a)***

3. The examiner thanks the applicant for addressing this issue. Applicant's arguments (pg. 1-15), filed on 6/28/04, with respect to the rejections of claims 8-13, 15-18; and 1, 7, 14, 19 and 20 under 35 U.S.C. 102(b) and 103(a), respectively, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of claims 1-6 and 8-20.

***Rejections***

***Claim Rejections - 35 USC § 103***

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
  1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 8-20 are rejected under 35 U.S.C. 103 (a) as unpatentable by Nayar ("DENEb/ERGO—A Simulation-based Human Factors Tool" (1995)), in view of Purschke (" Virtual Reality-New Methods for Improving and Accelerating the Development Process in Vehicle Styling and Designing" (1998)).

Nayar teaches an interactive 3D software simulation-based tool for human factors and ergonomic analysis which focuses on various motions, posture (abstract), scaling down (pg. 428, section 1.4, lines 7-8) to accommodate any specific purpose; but doesn't teach using this feature for automotive interior design.

Purschke et al, teaches a series of steps of car development using virtual humans for interior design.

At the time the invention, it would have been obvious to one of ordinary skill in the art to use Purschke et al to modify Nayar since it would have been advantageous to

have a scalable virtual human to adjust specific car interior features towards a specific market demographic.

Claim 1. A system for subjective evaluation of a vehicle design within a virtual environment using virtual reality comprising (Purschke: title): a scaleable physical property representative of the vehicle design, wherein the physical property is adjusted according to a scale ratio (Nayar pg. 428, section 1.4, lines 7-8) for an evaluator of the vehicle design wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population (Nayar: pg 482, sections 1.4; and 3; specifically, section 3, right column, 2<sup>nd</sup> paragraph, last sentence); a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator (Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1); a motion capture system for sensing a motion (Purschke: pg. 11, lines 26) of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; and a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design (Purschke: pg.1, Introduction, 3<sup>rd</sup> paragraph with pg. 9, figure 12; Nayar: figures 1 and 3).

Claim 2. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) includes an instrumented glove worn by the evaluator for sensing motion of the evaluator's hand (Nayar: pg. 428, section 1.5; and Purschke: pg. 11, line 25).

Claim 3.The system of claim 1(Purschke: title; Nayar pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the motion capture system includes magnetic spatial tracking sensors located on the evaluator for sensing motion of the evaluator's full body (Purschke: pg. 11, lines 26).

Claim 4. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the virtual reality display mechanism includes a head mounted display mechanism worn by the evaluator for seeing the virtual environment through an eye of the virtual human (Purschke: pg. 11, lines 26).

Claim 5. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the computer system includes at least one video terminal displaying a view of the virtual environment as seen through an eye of the virtual human.

Claim 6. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the computer system includes at least one video terminal displaying a third person view of the virtual human immersed within the virtual environment (Nayar: pg. 428, section 1.5 with figure 1 pg. 429).

Claim 8. A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment (Purschke: pg. 4, section 1.3), wherein the virtual environment is created within a computer system and includes the vehicle design; determining a scale ratio and range of a target population for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a the target population (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1); preparing an adjustable property using the vehicle design and the scale ratio (Nayar: pg. 428, section 1.4, lines 7-8); vowing the virtual human within the virtual environment to virtual represent a scaled evaluator (Nayar: pg.428, section 3) aligning the virtual human in the virtual environment with the evaluator (Nayar: pg.428, section 3)and the property, performing the evaluation of the vehicle desire by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle (Purschke: pg 9-10, section 3) .



Claim 9. Method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of preparing an evaluator includes the step of measuring an anthropometric dimension of the evaluator (Purschke: pg. 9, section 3.1 and Nayar: pg. 427, left column, section 1.1, line 10).

Claim 10. A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of preparing an evaluator includes the step of positioning a motion capture system on the evaluator for sensing a motion of the evaluator (Purschke: pg. 9, section 3.1) and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment.

Claim 11. A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of preparing an evaluator includes providing the evaluator (Purschke: pg. 9, section 3.1) with a virtual reality display (Nayar: figures 1 and 3) mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

Claim 12. A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8 with section 3; and Purschke: pg. 9 figure 12, and section 3.1) preparing an adjustable property includes the step of determining a scale ratio range for a member of a target population (Nayar: pg 482, sections 1.4; and 3; specifically, right column, 2<sup>nd</sup> paragraph, last sentence) represented in the evaluation and using the scale ratio range to determine adjustability of the property.

Claim 13. A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8 with section 3; and Purschke: pg. 9 figure 12, and section 3.1) including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation.

Claim 14. A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8 with section 3; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system (Nayar: pg. 428, section 1.4, lines 7-8 with section 3); creating a virtual human digitally to represent the evaluator using the digital motion capture sensor locations for the virtual human, the evaluator's measurements and the scale ratio (Nayar: pg. 428, section 1.4, lines 7-8 with section 3); aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on

the evaluator's, and checking that the motion of the virtual human mirrors the motion of the evaluator (Nayar: pg. 428, section 1.4, lines 7-8 with section 3; with Purschke: pg. 11, lines 26).

Claim 15. A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an adjustable property to represent the vehicle design (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1); measuring the evaluator (Nayar: pg. 428, section 3, left column, 2<sup>nd</sup> paragraph, lines 7-9); positioning a full-body motion capture system on an evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to a computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design determining a scale ratio and range of a target population for the evaluator wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a the target population (Nayar: pg. 428, section 1.4, and 3); adjusting the property using the scale ratio for the evaluator (Nayar: pg. 428, section 1.4, lines 7-8); growing the virtual human in the virtual environment using the measurements of the evaluator and the scale ratio to virtual represent a scaled evaluator(Nayar: pg. 428, section 3); aligning the virtual human in the virtual environment to the evaluator and the property;

performing the evaluation of the vehicle design by the evaluator; and using the evaluation of the vehicle design in the desire of the vehicle (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1).

Claim 16. A method as set forth in claim 15(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1), including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation (Nayar: pg. 428, section 3, right column, 1<sup>st</sup> paragraph).

Claim 17. A method as set forth in claim 16(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) including the step of determining whether to use a new evaluator and using a new evaluator if determined to use a new evaluator (Nayar: pg. 428, section 3, right column, 1<sup>st</sup> paragraph).

Claim 18. A method as set forth in claim 17 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) including the step of determining whether to revise the scale ratio if determined not to use a new evaluator and revising the scale ratio if determined to revise the scale ratio (Nayar: pg. 428, section 3, right column, 1<sup>st</sup> paragraph).

Claim 19. A method as set forth in claim 15(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system (Nayar: pg. 428, section 4, 3<sup>rd</sup> paragraph); creating a virtual human digitally using the motion capture sensor locations for the virtual human and the scaled measurements of the evaluator; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator (Nayar: pg. 428, section 3 and 4 with Purschke: pg. 11, lines 25-26); and checking that the motion of the virtual human mirrors the motion of the evaluator (Purschke: pg. 11, lines 25-26).

Claim 20. A method as set forth in claim 15(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1), determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine adjustability of the property (Nayar: pg 482, sections 1.4; and 3; specifically, section 3, right column, 2<sup>nd</sup> paragraph, last sentence).

***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is (703) 305-

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0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704. The fax number for the group is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

July 26, 2004

THS



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